

In the Specification:

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The present invention satisfies the foregoing need by providing a hose reel assembly having a unidirectional viscous [clutch assembly consisting] **damper assembly.** In the illustrative embodiment, the unidirectional viscous damper assembly consists of a viscous clutch and a unidirectional clutch. The viscous clutch is operatively coupled between the hose reel and the stationary support by means of the unidirectional clutch that engages the viscous clutch only when the hose reel is rewinding, not when the hose reel is paying-out the hose. [In an illustrative embodiment, the] The take-up reel comprises a stationary support shaft attached to a frame and a unidirectional clutch assembly supported for rotation by the stationary support shaft. The unidirectional clutch assembly is capable of rotating freely in one direction about the stationary support shaft but engages the stationary support shaft to prevent rotation in the opposite direction. The unidirectional clutch, in turn, is secured to a plurality of stator disks of a multi-disk viscous clutch. The rotor disks of the viscous clutch, in turn, are coupled to the hose reel. A chamber filled with a viscous fluid encloses the stator and rotor disks. The viscous fluid provides a shearing action to retard the relative motion between the stator disks attached to the unidirectional clutch assembly and the rotor disks attached to the hose reel. The multi-plate construction of the viscous clutch provides a highly efficient and compact retarding mechanism. A conventional torsional spring provides a biased urging the reel to fully rewind the hose wound thereon.

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Although certain preferred embodiments and methods have been disclosed herein, it will be apparent from the foregoing disclosure to those skilled in the art that variations and modifications of such embodiments and methods may be made without departing from the spirit and scope of the invention. For example, although in the illustrative embodiment of FIGS. 1-4 the vanes that provide the viscous dampening comprise rotors and stators that shear a viscous fluid, other velocity-proportional viscous dampening assemblies may be advantageously used in accordance with the present invention, such as turbine vanes or, as shown in FIG. 8, a plurality of

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[paddles] vanes 190 attached to a hub 192 disposed within chamber 60 containing the viscous fluid. Each of vanes 190 has a pivot 194 that permits the vane 190 to fold radially inward when reel 24 is rotated in a first direction, thereby disengaging the damping apparatus from reel 24. Each of vanes 190 also has a stop 196 that allows the vane 190 to deploy radially outward and stop when reel 24 is rotated in a second direction, thereby causing the vanes 190 to exert a viscous retarding torque on reel 24 when it is rotated in the second direction. Accordingly, it is intended that the invention shall be limited only to the extent required by the appended claims and the rules and principles of applicable law.
